PHYSICS

BOOKS - TARGET PUBLICATION

FORCE AND PRESSURE

Exercise

1. Fill in the blanks :

When comb gets rubbed against hair , it develops an ..... Charge on it .

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2. Fill in the blanks :

All objects in motion have ..... force acting on it on opposite direction .

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3. Fill in the blanks :

..... Forces do not change the state of rest or of motion of an object .

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4. Fill in the blanks :

If two forces are applied on one object in ..... direction to each other , a force equal to their difference acts on the object .

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5. Fill in the blanks :

If more than one forces are acting on a body ,

then the effect on the body is due to the .....

View Text Solution

6. Fill in the blanks :

The atmosphere exists to about ..... Height and extends up to about 400 km height .

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7. Fill in the blanks :

The buoyant force is greater if volume of the object is .....

View Text Solution

8. Fill in the blanks :

A solid is completely immersed in a liquid . The force exerted by the liquid on the solid will be in vertically ..... direction .

View Text Solution

9. Fill in the blanks :

An object will float on a liuid surface , if the density of the object is ..... Than the density of the liquid .

View Text Solution

10. Fill in the blanks :

When an object sinks into the liquid , the density of object is ..... then density of the liquid .

View Text Solution

11. Fill in the blanks :

The SI unit of density of a substance is .....

View Text Solution

12. Write proper word in the blank space :

The SI unit of force is ..... (dyne, newton , joule)

View Text Solution

13. Write proper word in the blank space :

The SI unit of pressure is ..... (N/m^3 , N/m^2 , kg/m^2 , Pa/m^2)

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14. Write proper word in the blank space :

The air pressure on our body is equal to ..... pressure . (atmospheric , sea bottom , space)

View Text Solution

15. Write proper word in the blank space :

For a given object , the buoyant force in liquids of different ..... Is ..... (the same , density , different , area)

View Text Solution

16. Choose the correct alternative :

When a wooden block is pushed , the force acting on it is .....

A. electric

B. unbalanced

C. balanced

D. nuclear

Answer: A::B::C::D

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17. Choose the correct alternative :

A person slips over banana peel or mud , due to .....

A. decrease in frictional force

B. increase in frictional force

C. increase in gravitational force

D. decrease in gravitational force

Answer: A::C::D

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18. Choose the correct alternative :

..... Is required to change the state of rest or uniform motion of a body in a straight line .

A. mass

B. velocity

C. force

D. inertia

Answer: C

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19. Choose the correct alternative :

A person gets a forward jerk when a car stops suddenly due to .....

A. inertia of direction

B. inertia of motion

C. the velocity of ear

D. weight of the person

Answer: A

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20. Choose the correct alternative :

As we go higher , atmospheric pressure .....

A. increases

B. decreases

C. remains same

D. initially decreases and then increases

Answer: A::C::D

View Text Solution

21. Choose the correct alternative :

The property of a liquid to exert an upward

force on an object immersed in it is called .....

A. pressure

B. force

C. buoyancy

D. density

Answer: A::B::C

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22. Choose the correct alternative :

The buoyant force is greater if volume of object submerged in liquid is .....

A. smaller

B. larger

C. equal

D. half

Answer: A

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23. MCQs based on practicals / projects :

A body immersed in a fluid experiences ..... Which equals to the weight of the fluid displaced by it .

A. a downward force

B. a tangential force

C. an upward force

D. a horizontal force

Answer: A::C::D

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24. MCQs based on practicals / projects :

When a body is immersed in a liquid , the apparent weight loss is equal to the ..... of the liquid displaced by it .

A. mass

B. weight

C. volume

D. density

Answer:

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25. MCQs based on practicals / projects :

The buoyant force is ..... If density of liquid is .....

A. greater, lesser

B. zero , lesser

C. lesser , greater

D. lesser , lesser

Answer:

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26. MCQs based on practicals / projects :

The volume of a solid substance is doubled by adding same amount of substance in it , then its density .....

A. becomes double

B. becomes half

C. remains unchanged

D. becomes four times

Answer: A::C::D

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27. MCQs based on practicals / projects :

Relative density has no units because .....

A. it's a ratio

B. it's a number

C. it's an inherent property of substance

D. it's ratio of two similar quantities

Answer: A

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28. MCQs based on practicals / projects :

1 kg/m^3 = ...

A. 10^-3 g/cm^3

B. 10^3 g/cm^3

C. 1 g/cm^3

D. 100 g/cm^3

Answer: A::C

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29. Name the following :

The tendency of a body to resist change in a state of rest or state of motion .

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30. Name the following :

Force exerted on a unit surface area by weight of air above it .

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31. Name the following :

The upward force exerted by a fluid (liquid or gas) on an object completely or partially immersed in it .

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32. Name the following :

Another term for relative density of a substance .

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33. Right or wrong . If wrong , write the correct sentence :

When a body is at rest , there is no force acting on it .

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34. Right or wrong . If wrong , write the correct sentence :

If several forces are applied on an object in the same direction , a force equal to their addition acts on the object.

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35. Right or wrong . If wrong , write the correct sentence :

When an electrical rotating fan is switched off it continues to rotate for some time due to inertia of motion .

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36. Right or wrong . If wrong , write the correct sentence :

The effect of force depends on volume of the substance .

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37. Odd one out :

Electrostatic force , frictional force , gravitational force , magnetic force

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38. Odd one out :

kg/m^3 , N/m^2 , bar , pascal

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39. Odd one out :

Density , relative density , pressure , volume .

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40. Complete the analogy :

Force/area : pressure :: mass/volume : .....

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41. Complete the analogy :

Rotating wheels of a car throwing mud tangentially : inertia of direction :: person getting a backward jerk when a car suddenly starts : .....

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42. Complete the analogy :

101 x 10^3 Pa : 10^3 mbar :: 10^2 Pa : .....

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43. Match the following :

	A group		B group
i.	Fluid	a.	Higher pressure
ii.	Blunt knife	b.	Atmospheric pressure
iii.	Sharp needle	c.	Specific gravity
iv.	Relative density	d.	Lower pressure
v.	hecto-pascal	e.	Same pressure in all directions

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44. Match the following :

Match the following columns 2 and 3 with

column I and rewrite the table . :

	Column 1	Column 2	Column 3
i.	Pressure	Mass/ volume	Specific gravity
ii.	Density	Force/ area	Decreases with increase in height above sea level.
iii.	Atmospheric pressure	No unit	Useful to determine purity of a substance
iv.	Relative density	pascal	Decreases with increase in area.

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45. Answer the following :

What will happen if there is no frictional force present on earth ?

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46. Answer the following :

Make a list of some examples in which contact and non contact forces are applied . Write the types of force .

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47. Answer the following :

How does a body achieve the state of rest or

state of uniform motion ?

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48. Answer the following :

When big grain storage container is required to slide on the ground , it becomes easier if two persons push it rather than one person . When the force is applied by both in the same direction , the movement is easy . You may have experienced this . what do we understand from this example ?

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49. Answer the following :

Explain inertia of rest with examples .

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50. Answer the following :

What is inertia of motion ? Give some examples to support your answer .

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51. Answer the following :

Explain the term inertia of direction (directional inertia) with suitable examples .

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52. Answer the following :

Are force and pressure related to each other ?

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53. Answer the following :

What happens to the pressure exerted on a given area if the force applied is doubled ?

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54. Answer the following :

You must have seen a vegetable vendor carrying a basker on her head . She keeps a twisted piece of cloth on the head , below the basket . Hoe does it help ?

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55. Answer the following :

Give conversion between different units of pressure .

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56. Answer the following :

How is pressure created in a closed container ?

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57. How much pressure do we carry on our heads ? Why don't we feel it ?

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58. Answer the following :

Explain with a neat diagram , how is atmospheric pressure created . Does it depend on height above sea level ?

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59. Answer the following :

Explain with the help of graph , the variation of atmospheric pressure with height .

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60. Answer the following :

At the sea level the atmospheric pressure 101 x 10^3 Pa is acting on a table top of size 1 m^2 . Under such a heavy pressure , why doesn't the table top crumble down ?

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61. Answer the following :

What is buoyant force ? How does it act on a body which is immersed in a liquid ?

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62. Answer the following :

State the factors on which the buoyant force acting on an object depends .

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63. Answer the following :

How can you increase the buoyant force acting on a body ?

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64. Answer the following :

An iron nail sinks in water , but why does the massive steel ship float on it ?

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65. Answer the following :

It becomes easier to swim in sea water than in fresh water . Lemon sinks in a glass filled with water with it floats when we stir in two spoons of salt in the water . What is understood from these examples ?

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66. Answer the following :

How it is decided that the object left in liquid will get sink in the liquid , will float on the surface , or will float inside the liquid ? Which forces are unbalanced in the above cases ?

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67. A plastic cube is released in water. Will it sink or come to the surface of water ?

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68. Answer the following :

Lactometer and hydrometer are based on which principle ?

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69. Answer the following :

State few applications of Archimedes principle .

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70. Answer the following :

State a point of difference between density and relative density ?

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71. Give reasons :

It is advised to tie any luggage kept on the roof of the bus with a rope .

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72. Give reasons :

If a stationary bus suddenly speeds up passengers are thrown in the backward direction .

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73. Give reasons :

A carpet is lifted up to remove dust from it .

Watch Video Solution

74. Give reasons :

A person jumping out of a moving bus falls with his head forward .

Watch Video Solution

75. Give reasons :

Fruits can easily be cut with a sharp knife .

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76. Give reasons :

It is easy to cut vegetables , fruits with a sharp knife . A blunt knife does not work here . Why does this happen ?

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77. Why do the load carrying heavy vehicles have large number of wheels ?

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78. Give reasons :

A camel's feet do not penetrate into the sand .

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79. Give reasons :

We cannot stand at one place for a long time .

How can we sleep on a place for 8 and odd hours ?

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80. Give reasons :

For skiing on ice , why are long flat ski used ?

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81. Give reasons :

The wall of a dam is broad at its base .

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82. Give reasons :

Some people feet their ears popping at the

top of a mountain .

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83. Why some people feel breathless as they climb higher and higher on a mountain.

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84. Give reasons :

While pulling a bucket from a well , the bucket full of water immersed fully in water appears

to weigh less than when it has been pulled out of water . Why ?

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85. Give reasons :

A ship dips to a larger depth in fresh water as compared to marine water .

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86. Give reasons :

A piece of wood sinks more in kerosene than in water .

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87. Distinguish between :

Balanced and unbalanced force .

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88. Distinguish between :

Inertia of motion and inertia of rest .

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89. Distinguish between :

Inertia of motion and directional inertia .

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90. Distinguish between :

Density and relative density .

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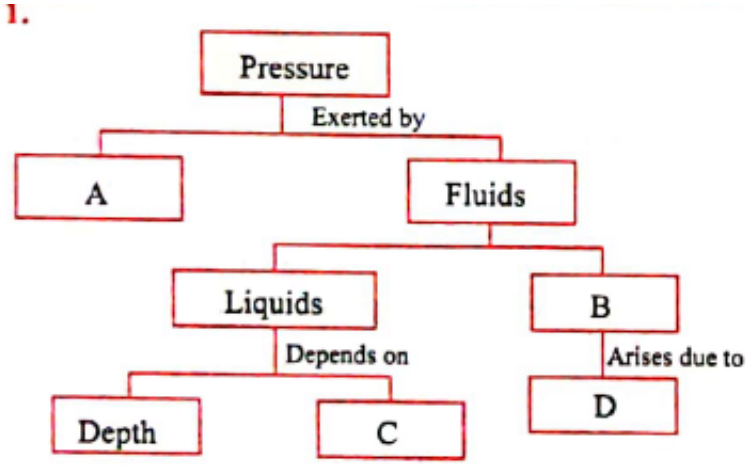
91. Complete the given chart/ table :

1.



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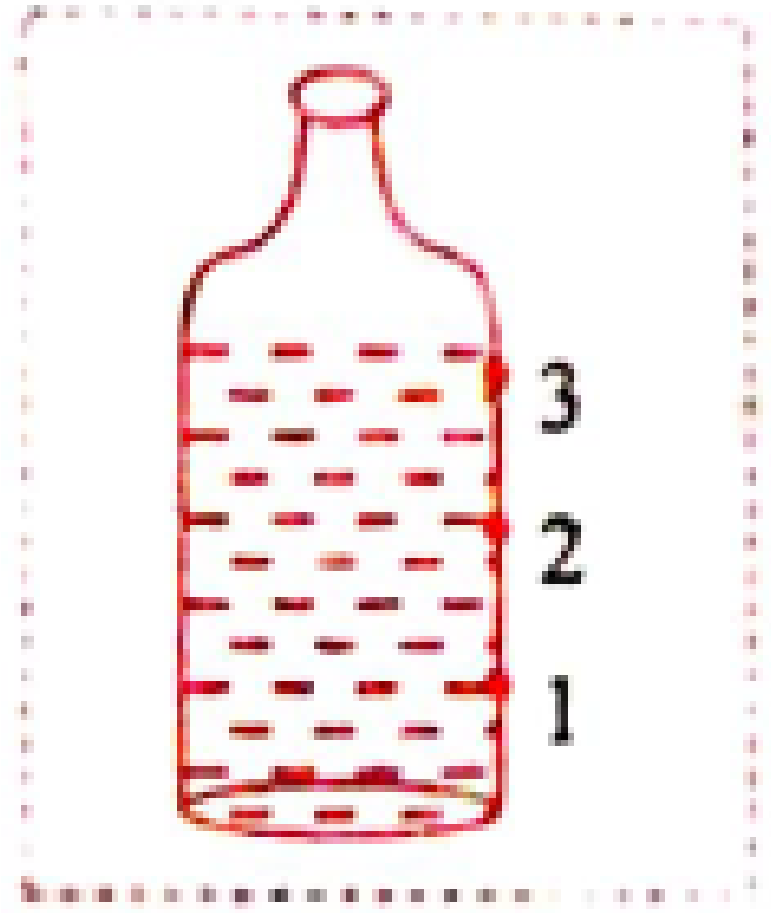
92. Question based on diagram :

In the diagram shown above , explain at which point pressure due to liquid will be minimum

and maximum ?:



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93. Question based on paragraph :

A boy pushed his toy car on a table . The car moved ahead and stopped after travelling a certain distance . But when he kept on pushing his car , the car started moving with a uniform velocity . The boy later decided to do some adventurous activity while playing with his car , so he launched his toy car from a platform to a bucket filled with water as soon as the car landed inside the bucket , the water from the bucket splashed out and the boy enjoyed his new game .:

Why did the toy car stop after travelling a certain distance ?

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94. Question based on paragraph :

A boy pushed his toy car on a table . The car moved ahead and stopped after travelling a certain distance . But when he kept on pushing his car , the car started moving with a uniform velocity . The boy later decided to do some adventurous activity while playing with

his car , so he launched his toy car from a platform to a bucket filled with water as soon as the car landed inside the bucket , the water from the bucket splashed out and the boy enjoyed his new game .:

Which type of force was applied by the boy when he kept on pushing the car ?

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95. Question based on paragraph :

A boy pushed his toy car on a table . The car

moved ahead and stopped after travelling a certain distance . But when he kept on pushing his car , the car started moving with a uniform velocity . The boy later decided to do some adventurous activity while playing with his car , so he launched his toy car from a platform to a bucket filled with water as soon as the car landed inside the bucket , the water from the bucket splashed out and the boy enjoyed his new game .:

What is the reason for splashing of water out from the bucket ?

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96. Solve the following problems :

A force of 1000 N is applied over an area 50cm x 20cm . What is the pressure acting on the area ?

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97. Solve the following problems :

The area of the tip of a screw is 0.5 mm^2 and

its weight is 0.5 N . Calculate the pressure (in pa) exerted by the screw on a wooden plank .

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98. Solve the following problems :

The area of the bottom of a tiffin box is 0.25 m^2 and weight is 50N , Calculate the pressure exerted by the box on the shelf .

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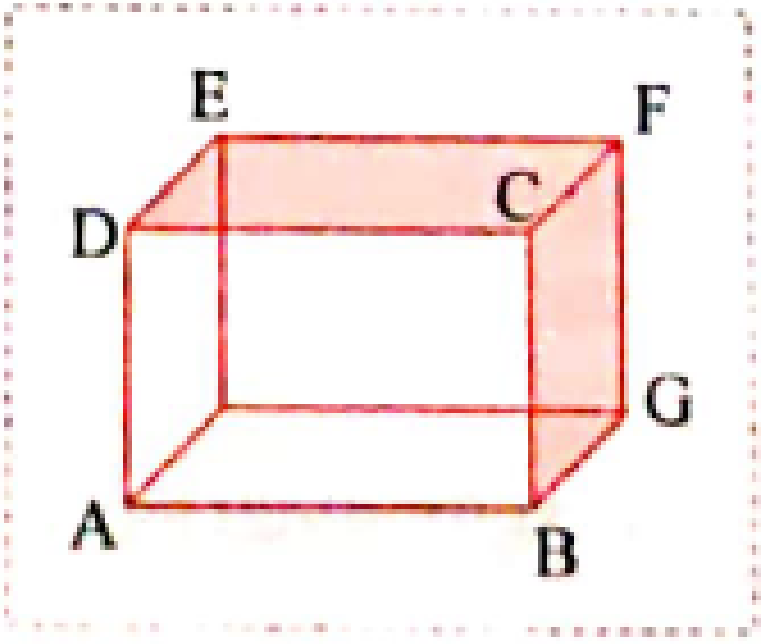
99. Solve the following problems :

Mass of a block of metal is 10 kg and its dimensions are length 50 cm , breadth 10cm , height 20 cm as shown in figure . If the metal block is placed on the table , find out on which of the surfaces ABCD , CDEF and BCFG will the

pressure exerted on the table be maximum . .:



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100. Solve the following example :

A body of volume $100cm^3$ is immersed

completely in water. Find the weight of the water displaced by the body. $[g = 9.8m/s^2, \rho(water) = 10^3 kg/m^3]$

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101. Solve the following example :

The volume of an object is $20cm^3$ and the mass is 50 g. The density of water is `1 g/cm^(-3). Will the object float on water or sink in water ?

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102. Solve the following example :

The volume of a plastic covered sealed box is $350cm^3$ and the box has a mass 500 g Will the box float on water or sink in water ? What will be the mass of water displaced by the box ?

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103. Solve the following problems :

Complete the following table :

No.	Mass (kg)	Volume (m^3)	Density (kg/m^3)
i.	350	175	_____
ii.	_____	190	4

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104. Solve the following problems :

The density of a metal is 10.8 x 10^3 kg/m^3 .

Find the relative density of metal .

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105. Solve the following problems :

Calculate the relative density of iron if the density of water is 10^3 kg/m^3 and the density of iron is 7.85 x 10^3 kg/m^3.

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106. Solve the following problems :

Specific gravity of platinum is 20.4 . The density of water is 10^3kg/m^3 . What is the density of platinum ?

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107. Solve the following problems :

Complete the following table :

No.	Density of metal (kg/m^3)	Density of water(kg/m^3)	Relative Density
i.	_____	10^3	5
ii.	8.5×10^3	10^3	_____

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108. Practice problems :

A force of 3000 N is applied over an area 80cm

x 20cm . What is the pressure acting on the area ?

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109. Practice problems :

calculate pressure exerted by a screw on a wooden plank if the area of the screw is 0.24 mm^2 and its weight is 4N .

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110. Practice problems :

If the pressure exerted on an area 10cm x 10cm is 1000 dyne/cm^2 , find the force acting on the area (in dyne).

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111. Practice problems :

Relative density of a substance is 67.8 and the density of water is 10^3 kg/m^3 . Calculate the density of substance .

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112. Practice problems :

Calculate relative density of a metal having density 38.8 x 10^3 kg/m^3 , if density of water is 10^3 kg/m^3 .

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113. Practice problems :

Volume of an object is 30 cm^3 and the mass

is 60g . Density of water is gcm^-3 . Will the object float on water or sink in water ?

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114. Practice problems :

A metal weights 0.54 kg in air . If its density is 2.7 g/cc , what will be its weight in water ?

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115. Practice problems :

A metal bob of volume 250 cm^3 and mass 150 g is immersed in kerosene (density = 0.8 g/cc) what will be the mass of kerosene displaced by the bob ?

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116. What is a force ?

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117. You have learnt about static electricity in the previous standard . Electrostatic force is a non contact force . To verify this , which experiment will you perform ?

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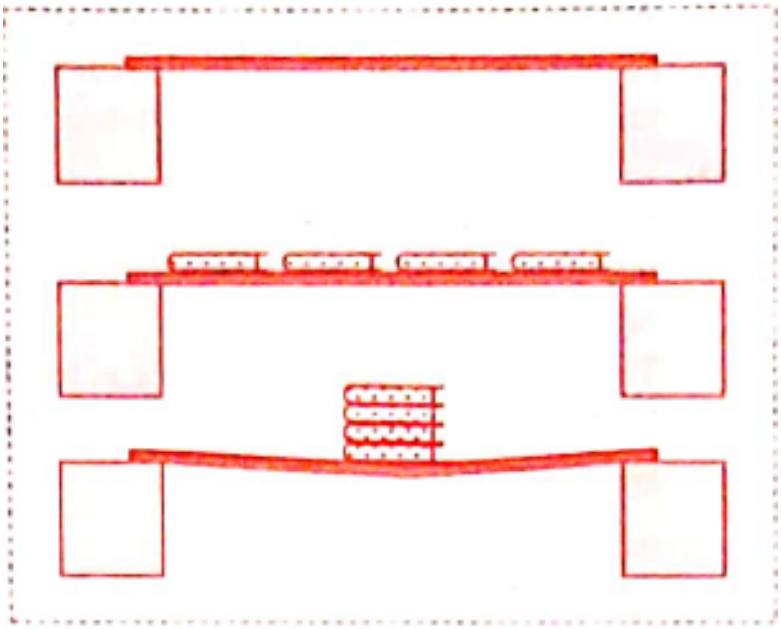
118. Do the activity as depicted in figure . What is seen ? :



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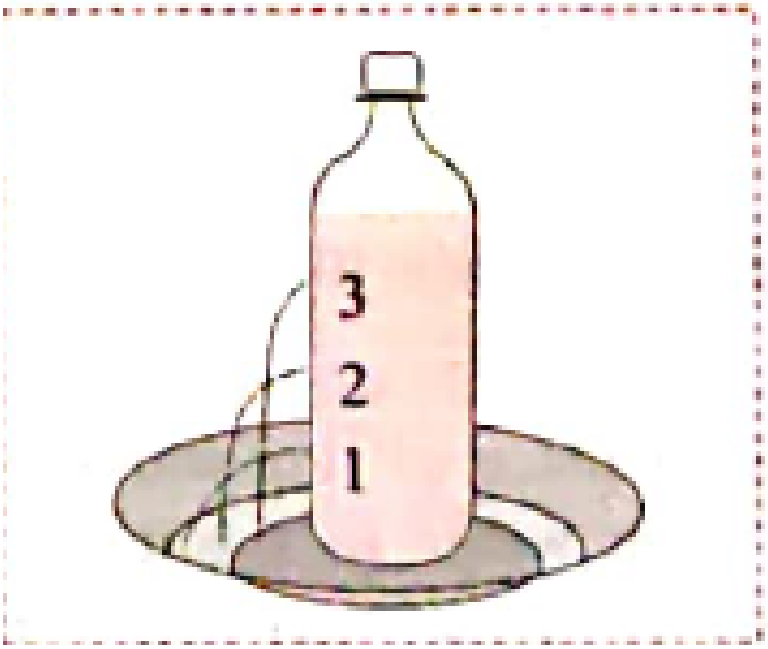
119. Take a plastic bottle . Pierce it with a thick needle at the points 1,2,3 as shown in thefigure . Fill water in the bottle upto full height .

As shown in the figure , water jets will be seen emerging and projecting out .

The water jet emerging from the hole at the top will fall closest to the bottle . the jet from the lowest hole falls farthest from the bottle . also , jets coming out from the two holes at the same level fall atthe same distance from

the bottle . what is understood from this ?:



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120. Take a piece of thin aluminium sheet and dip it in water in a bucket . What do you observe ? Now shape the same piece of

aluminium into a small boat and place it on the surface of water . It floats , isn't it ?

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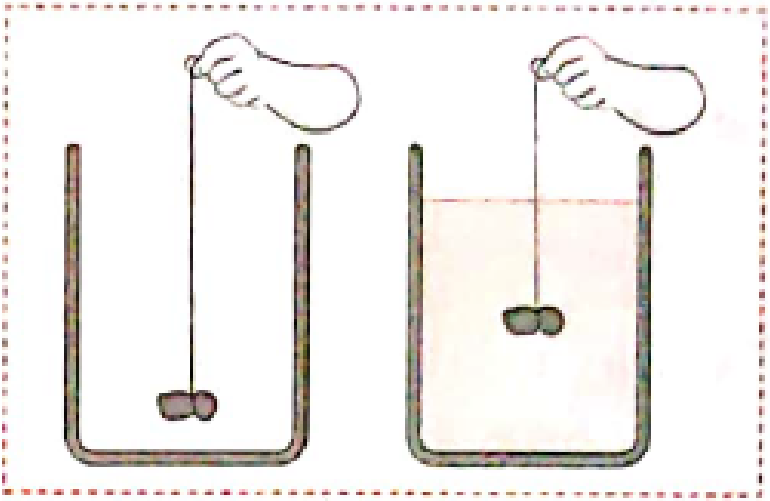
121. Take a long rubber band and cut it at one point . At one of its ends tie a clean washed stone or a 50g weight as shown in figure

Now hold the other end of the rubber band and make a mark there . Keep the stone hanging in air and measure the length of the rubber band from the stone to the mark made

earlier . now take water in a pot and hold the rubber band at such a height that the stone sinks in it . again measure the length of the rubber band up to the mark . :

What is observed ?:



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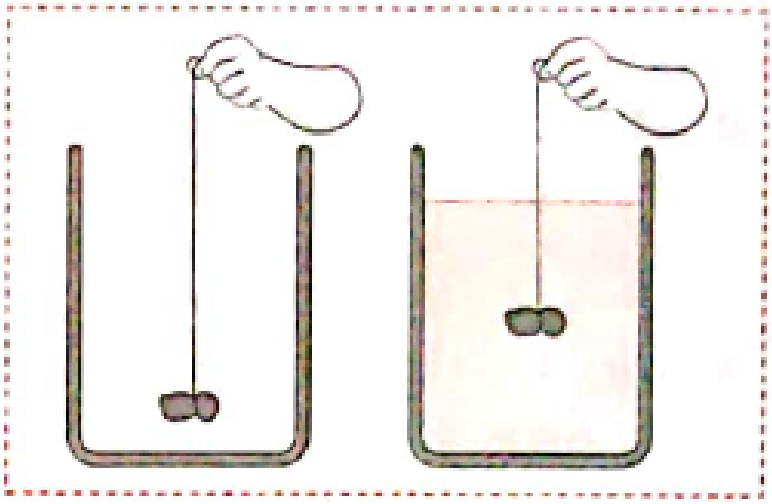
122. Take a long rubber band and cut it at one point . At one of its ends tie a clean washed stone or a 50g weight as shown in figure

Now hold the other end of the rubber band and make a mark there . Keep the stone hanging in air and measure the length of the rubber band from the stone to the mark made earlier . now take water in a pot and hold the rubber band at such a height that the stone sinks in it . again measure the length of the rubber band up to the mark . :

What could be the reason for a shorter length

of the rubber band in water ? :



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123. Answer the following questions :

Fill in the blanks :

An ..... Force acting on an object brings it in motion .

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124. Answer the following questions :

State if following statement is right or wrong :

If the buoyant force is equal to the weight of the object , then the object floats inside the liquid .

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125. Answer the following questions :

Complete the analogy :

Pressure : N/m^2 :: density : .....

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126. Answer the following questions :

Find odd one out :

attraction of two magnets , walking on road , lifting dumbells , pulling a trolley

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127. Answer the following questions :

Match the columns :

	Column I		Column II
a.	Pressure	1.	Mass/Volume
b.	Density	2.	Force/Area
		3.	Mass × Volume

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128. Choose the correct alternative :

..... Objects offer more inertia .

A. heavier

B. clourful

C. lighter

D. transprent

Answer:

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129. Choose the correct alternative :

At sea level on the earth's surface the atmospheric pressure is about .....

A. 10^1 Pa

B. 10^6 Pa

C. 10^5 Pa

D. 10^8 Pa

Answer:

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130. Answer the following questions :

Why do passangers travelling by a bus receive

a forward jerk when the moving bus suddenly stops ?

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131. Answer the following questions :

Differentiate between inertia of motion and inertia of direction .

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132. Answer the following questions :

Explain with neat diagram the atmospheric pressure and its variation with the height from the sea level .

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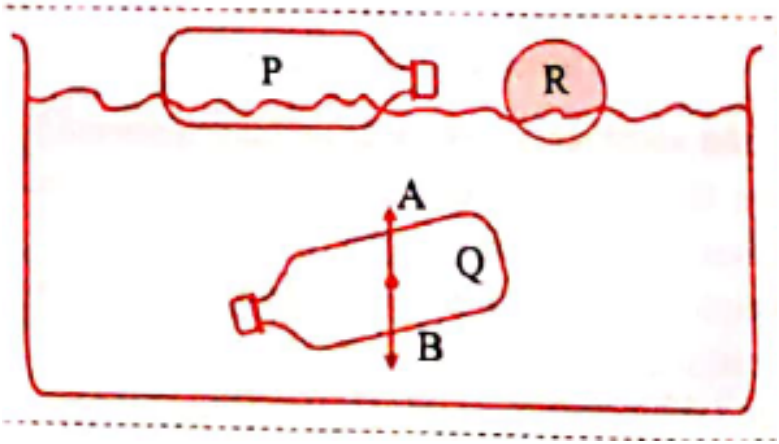
133. Answer the following questions :

Observe the given figure and answer the following questions :

What are the forces 'A' and 'B' ?



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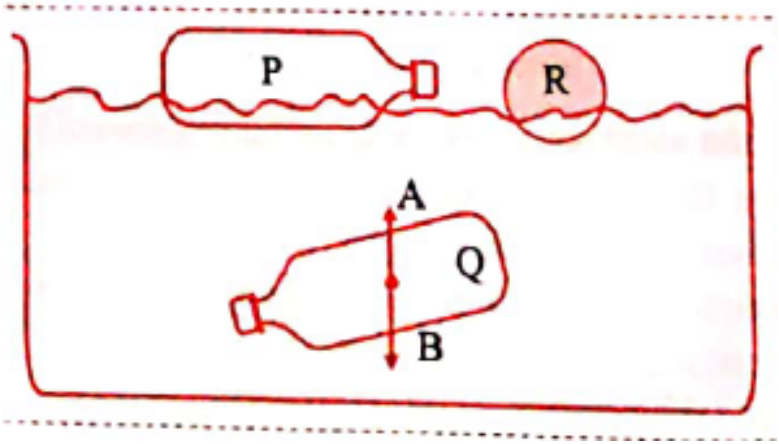
134. Answer the following questions :

Observe the given figure and answer the following questions :

Explain the reason behind floating of objects P

and R



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135. Answer the following questions :

State the factors on which the buoyant force acting on an object depends .

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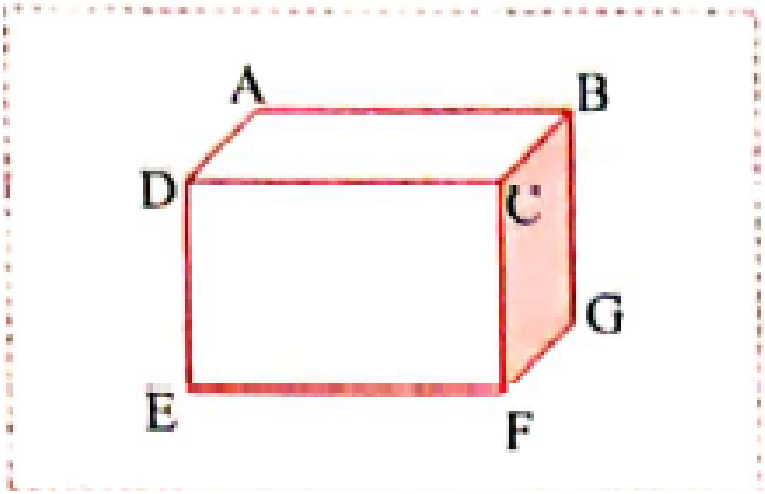
136. Answer the following questions :

A metal block having mass 45 kg with its length 150cm (AB = 150 cm) , breadth 50 cm (AD = 50cm) and height 30 cm (DE= 30cm) is shown in the given figure

Calculate the pressure exerted by the metal block when it is made to lie on a table top with the surface :

ABCD :



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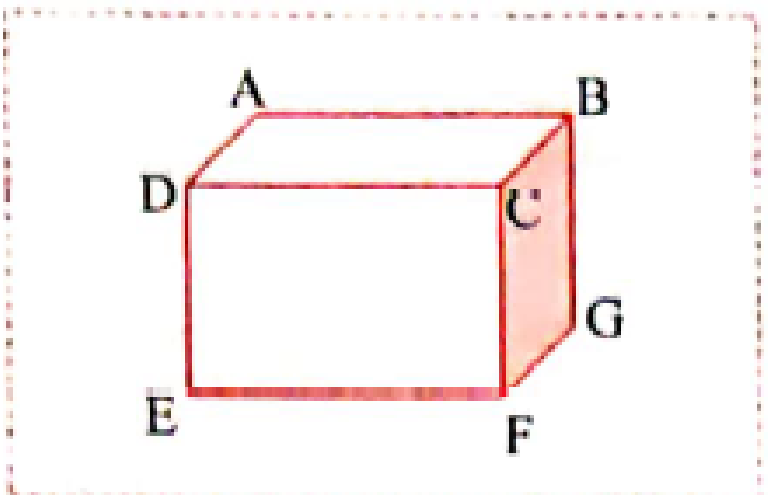
Calculate the pressure exerted by the metal block when it is made to lie on a table top with the surface :

DCFE :



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138. Answer the following questions :

Define Buoyant force . A plastic cube is released in water will it sink or come to the surface of water ?

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139. Answer the following questions :

If density of water is 10^3 kg/m^3 and density of copper is 7.52 x 10^3 kg/m^3 , calculate relative density of copper .

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